

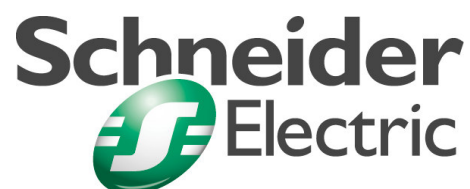
MV Network Management

Fault tracking
Monitoring and Control

Merlin Gerin **Easergy** Range
T200 P, T200 I

DNP3 Communication

User's manual



We do more with electricity!

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Functionnalities

Telecontrol

- Transmission of remote control commands to MV switches.
- Transmission of the remote control command to reset fault currents stored,
- Transmission of enable/disable automatism command (when automatism exists).

Monitoring

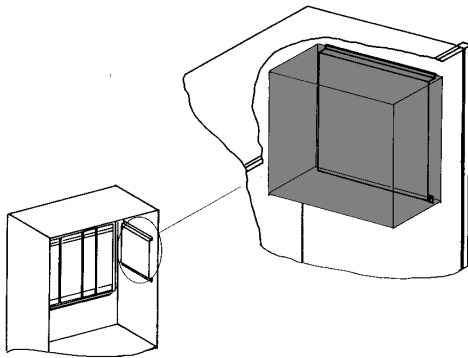
- Position of switches,
- Enable/disable automatism position (when automatism exists),
- Status of switches,
- Phase and earth fault (A and B) currents of ways,
- MV presence of ways ,
- Digital inputs,
- Local / Remote control operating mode,
- Immediate AC supply OFF,
- Delayed AC supply OFF,
- Charger fault / FPI fault,
- Battery fault,
- Switchgear supply OFF,
- Automatism operated (when automatism exists).

Measurements

- Phase currents,
- Voltage (T200 P)
- Currents, voltages given by optional PowerMeters (T200 I).
- Active and reactive energies given by optional PowerMeters (further development) (T200 I).

Characteristics

Type of transmission	asynchronous serial
Protocol	DNP3
Data format	1 start bit, 8 data bits, no parity, 1 stop bit
Speed	200, 300, 600, 1200, 2400, 4800, 9600 bauds
Electrical interface	RS232
Type of connector	9 pin SUB-D, male



Space available for a transmission interface

The top right section of the equipment contains a space available for a transmission interface (Modem, optical fibre, radio). A support structure mounted on sliding rails offers multiple possibilities for adding such a unit.

Connection to a transmission interface

Power supply

The interface may be connected to the "Telecomms supply" terminals.

- Voltage available :

12 VDC (10.8 to 14.8 VDC)

- Current available :

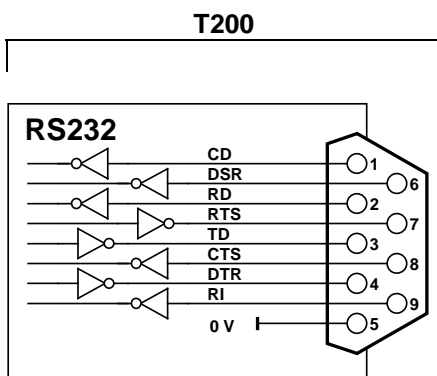
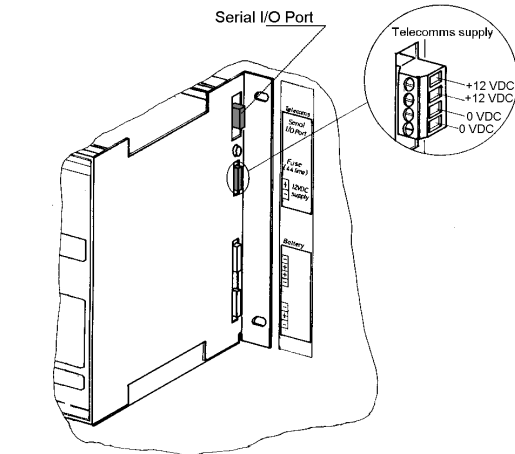
See T200 documentation for further details. This output is protected by a 4A time-lag fuse located on the right side of the rack.

Serial I/O Port

The RS 232 serial I/O Port is available on the 9-pins SUB-D male socket, located on the right side of the rack.

■ Signals wiring:

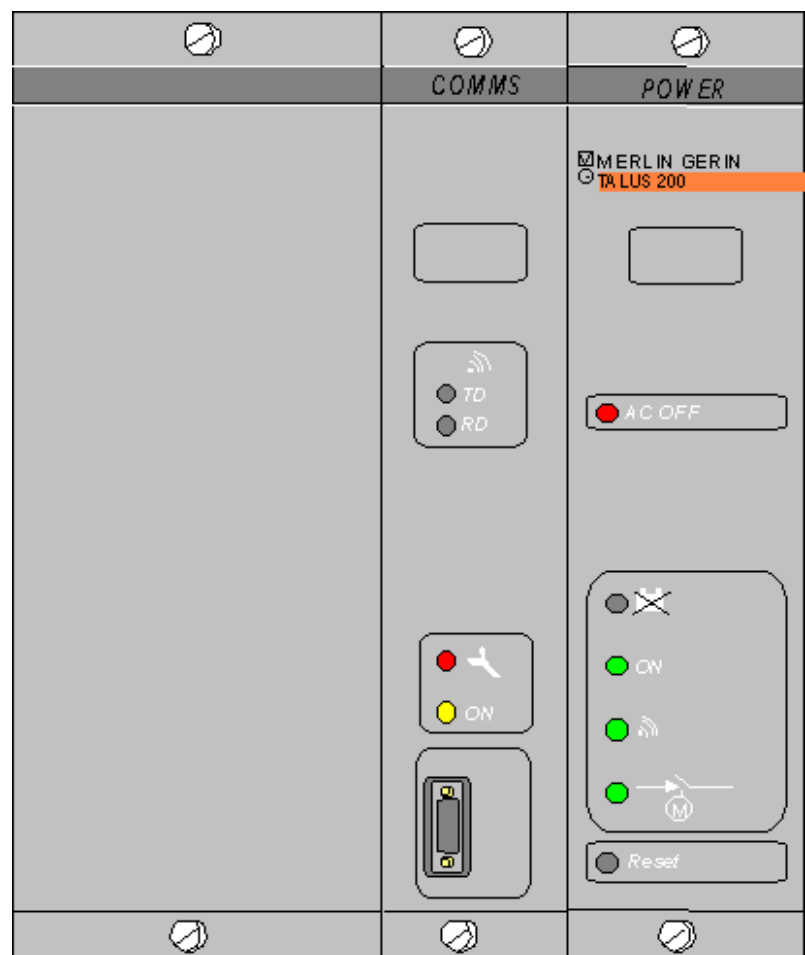
- ☐ CD: Carrier Detect
- ☐ RD: Receive Data.
- ☐ TD: Transmit Data.
- ☐ DTR: Data Terminal Ready.
- ☐ DSR: Data Set Ready.
- ☐ RTS: Request To Send.
- ☐ CTS: Clear To Send.
- ☐ RI: Ring Indicator.



Location

Communication using DNP3 protocol takes place via a "COMMS" module.

The module is installed in the rack of a T200 enclosure on the left side of the Power supply module.



Communication module configuration

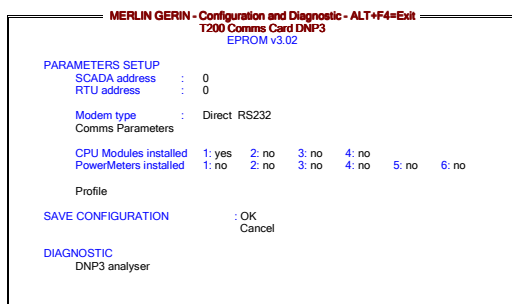
The communication parameters are configured by using the **T200 Configuration and diagnostic** software.

- Plug a computer to the **COMMS** module.
- The computer being under DOS control, insert the **T200 Configuration and diagnostic** disquette and enter **A:MG** then **ENTER**.

The main menu is displayed.

The use of the software is described into the **T200 user's manual**.

Main screen



SCADA address:

- May take every value between 0 and 65534.
- Default value is 0.

RTU address of ASDU:

- May take every value between 0 and 65534.
- Default value is 0.

Modem type:

- The different links available are Direct RS 232, Radio (external modem) and Direct RS 485 (with special Comms interface).
Notice that, if RS 485 is present, you have no choice to enter.
- Default is "Direct RS 232"

CPU Modules installed:

- Permits to declare the CPUs which are used (1 to 4). Each CPU may be used (yes) or not (no).
 - Default setting is "yes" for the first CPU, "no" for the others.
- Notice that some information are only available from CPU number 1 (Local, ...).

PowerMeters installed:

- Permits declaration of PowerMeters used (1 to 6) when optional Powermeters are used (T200 I). To declare a PowerMeter enter "yes", "no" otherwise.
- Default setting is "no" for all PowerMeters.

Comms parameters

Comms Parameters

Modem : Direct RS 232

Host baud rate : **1200** bauds

Handle DSR : **no**
Handle CD : **no**

Handle CTS : **no**
CTS delay : **20ms**
RTS (or CTS) to message delay : **20ms**
Message to RTS delay : **20ms**

ESCAPE=Exit

Modem : Direct RS 232

This menu is available when "Direct RS 232" has been chosen for "Modem type".

Host baud rate:

- This is the transmission speed between the SCADA and RTU. The range is from 200 to 9600 bauds. For test purposes, if possible, select a low speed. So, it will be easier to show the messages exchanged between the SCADA and the RTU (see DNP3 analyser below).
- The default value is set to 1200 bauds.

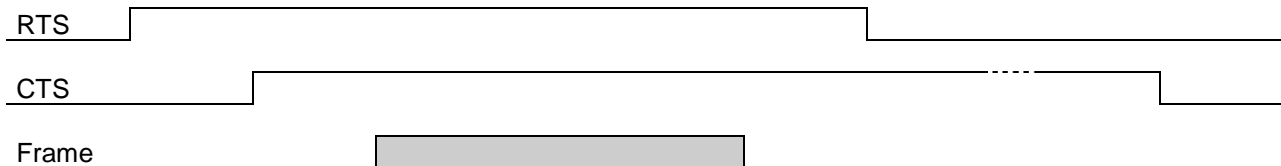
Handle DSR:

- Select "yes" if you want T200 to detect connection, using DSR.
- Default value is "no".

Handle CD:

- Select "yes" if you want T200 to control reception with CD.
- Default value is "no".

Frame transmission may be represented as below:



Handle CTS:

- Select "yes" if you want T200 to wait for CTS after asserting RTS before sending the message.
- Default value is "no".

CTS Delay:

- It's the delay T200 will wait for CTS if handled. Value is from 20 to 500 ms.
- Default value is 20 ms.

RTS (or CTS) to message delay:

- It's the delay T200 will wait after RTS (or CTS if handled) before sending the message. Value is from 0 to 500 ms.
- Default value is 20 ms.

Message to RTS delay:

- It's the delay T200 will wait after the end of the message before asserting RTS low. Value is from 0 to 500 ms.
- Default value is 20 ms.

Modem : Radio (external modem)

Comms Parameters

Modem : Radio (external modem)

Host baud rate : **1200** bauds

DTR to RTS delay : **20ms**
Handle CTS : **no**
CTS delay : **20ms**
RTS (or CTS) to message delay : **20ms**
Message to RTS delay : **20ms**

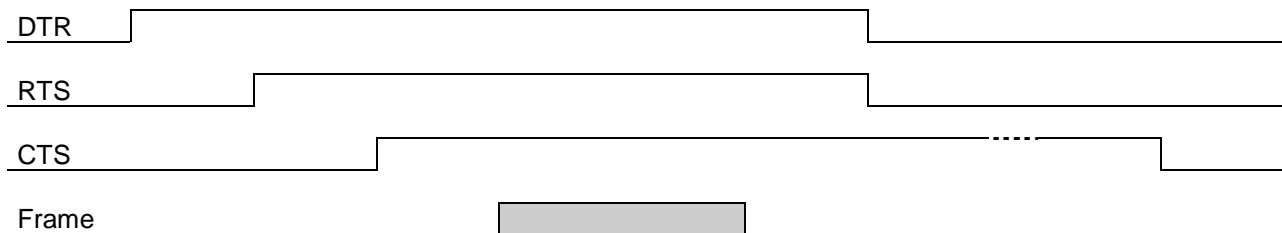
ESCAPE=Exit

This menu is available when "Radio (external modem)" has been chosen for "Modem type".

Host baud rate:

- This is the transmission speed between the SCADA and RTU. The range is from 200 to 9600 bauds. For test purposes, if possible, select a low speed. So, it will be easier to show the messages exchanged between the SCADA and the RTU (see DNP3 analyser below).
- The default value is set to 1200 bauds.

Frame transmission may be represented as below:



DTR to RTS delay:

- It's the delay T200 will wait after asserting DTR before setting RTS to "1". Value is from 0 to 500 ms.
- Default value is 20 ms.

Handle CTS:

- Select "yes" if you want T200 to wait for CTS after asserting RTS before sending the message.
- Default value is "no".

CTS Delay:

- It's the delay T200 will wait for CTS if handled. Value is from 20 to 500 ms.
- Default value is 20 ms.

RTS (or CTS) to message delay:

- It's the delay T200 will wait after RTS (or CTS if handled) before sending the message. Value is from 0 to 500 ms.
- Default value is 20 ms.

Message to RTS delay:

- It's the delay T200 will wait after the end of the message before asserting RTS low. Value is from 0 to 500 ms.
- Default value is 20 ms.

Comms Parameters

Modem : Direct RS 485

Host baud rate : **1200** bauds

RTS to message delay : **20ms**

Message to RTS delay : **20ms**

ESCAPE=Exit

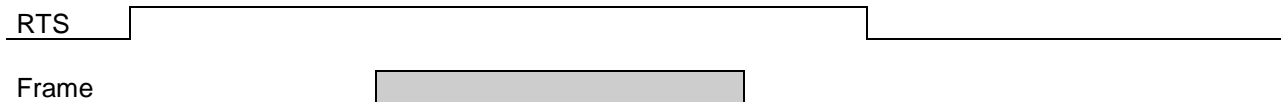
Modem : Direct RS 485

This menu is available when special Comms RS 485 interface is used.

Host baud rate:

- This is the transmission speed between the SCADA and RTU. The range is from 200 to 9600 bauds. For test purposes, if possible, select a low speed. So, it will be easier to show the messages exchanged between the SCADA and the RTU (see DNP3 analyser below).
- The default value is set to 1200 bauds.

Frame transmission may be represented as below:



RTS to message delay:

- It's the delay T200 will wait after RTS before sending the message. Value is from 0 to 500 ms.
- Default value is 20 ms.

Message to RTS delay:

- It's the delay T200 will wait after the end of the message before asserting RTS low. Value is from 0 to 500 ms.
- Default value is 20 ms.

MERLIN GERIN - Configuration and Diagnostic - ALT+F4=Exit Profile	
LINK LAYER	
Inter-message delay	: 10ms
Requires Data Link Layer Confirmation	: yes
Maximum Data Link Re-tries	: 3
Time-out	: 5s
Delay before emission	: 0ms
APPLICATION LAYER	
Handle requested object(s) unknown bit	: yes
Transmission of measures on changes	: yes
- Measured value deadband (CPU)	: 10
- Measured value deadband (PM)	: 10
ESCAPE=Exit	

Profile

Inter-message delay:

- It's the minimum line idle interval between two consecutive frames. Values are from 10 to 100 ms.
- 10 ms is the default value.

Requires Data Link Layer Confirmation:

- Select "yes" if you want User Data to be sent using a "SEND – CONFIRM expected" frame type by the Link Layer. Selecting "no" configures Link Layer to use a "SEND – NO REPLY expected" frame type for User Data transmission. Notice that in the case where "SEND – NO REPLY expected" frame type is used T200 will never send "RESET of remote link" frames. It will work strictly as a slave.
- Default is "yes".

Maximum Data Link Re-tries:

- Defines the number of re-tries by the Link Layer, when the RTU doesn't receive any "CONFIRM" frame (ACK or NACK) to a frame using a "SEND – CONFIRM expected" frame type. When the Maximum Data Link Re-tries is reached without confirmation, Link Layer will perform "RESET of remote link" to re-initialise the link.
- Default value is 3.

Time-out:

- It's the delay Link Layer will wait for a "CONFIRM" frame after sending a "SEND – CONFIRM expected" frame. Values are from 1 to 10 s.
- Default value is 5 s.

Delay before emission:

- To avoid collision when spontaneously emitting on a half-duplex link, T200 will wait a T delay after seeing the link is no more busy (using CD). If at this moment, CD is still not present, T200 will send the message. If present, it will wait another T delay. T delay is the sum of "Delay before emission" and a random value. Configured values are from 0 to 10 s.
- Default value is 0 s.

Handle requested object(s) unknown bit :

- Because some SCADAs don't manage "requested object(s) unknown" bit in "IIN" byte properly, you can permit or inhibit it's transmission.
- Default value is "yes".

Transmission of measures on changes:

- You can permit or inhibit transmission of measures on changes by selecting respectively "yes" or "no".
- Default value is "yes".

Measured value deadband (CPU):

- It's the difference, for measures obtained from CPU cards, there must be between last reported value and current value to have a Change Event generated. Range is from 1 to 10 000.
- Default value is 10

Measured value deadband (PM):

- It's the difference, for measures obtained from PowerMeters (when option installed – T200 I only), there must be between last reported value and current value to have a Change Event generated. Range is from 1 to 10 000.
- Default value is 10

```
DNP3 analyser

ESCAPE=Exit, SPACE=Pause, C=Clear
04:49:14 Connected - answer mode
04:49:16 >> ..... 05 64 05 40 22 00 03 00 38 20
04:49:21 < ..... 05 64 05 80 03 00 22 00 4E E8
05:15:63 < ..... 05 64 05 C0 03 00 22 00 F4 D8
05:15:63 >> ..... 05 64 05 00 22 00 03 00 82 10
05:26:57 < ..... 05 64 08 C4 03 00 22 00 B9 36
05:26:57 C0 C0 17 C2 A7
05:26:58 >> ..... 05 64 10 44 22 00 03 00 68 2C
05:26:58 C0 C0 81 90 00 34 02 07 01 AF 00 38 3E
06:13:60 < ..... 05 64 12 C4 03 00 22 00 13 F2
06:13:60 C0 C1 02 32 01 07 01 20 D1 13 10 DB 00 8C CF
06:13:65 >> ..... 05 64 0A 44 22 00 03 00 C2 E8
06:13:65 C1 C1 81 80 00 5D 12
07:03:20 < ..... 05 64 0E C4 03 00 22 00 60 5D
07:03:20 C0 C2 01 3C 02 06 3C 01 06 FA 35
07:03:27 >> ..... 05 64 2A 44 22 00 03 00 40 19
07:03:27 C2 C2 81 80 00 01 01 00 60 65 33 01 01 00 80 9C B0 70
00 00 00 04 1E 02 00 E0 E3 01 00 00 01 00 00 00 AB 9E
00 80 00 00 80 9F 55

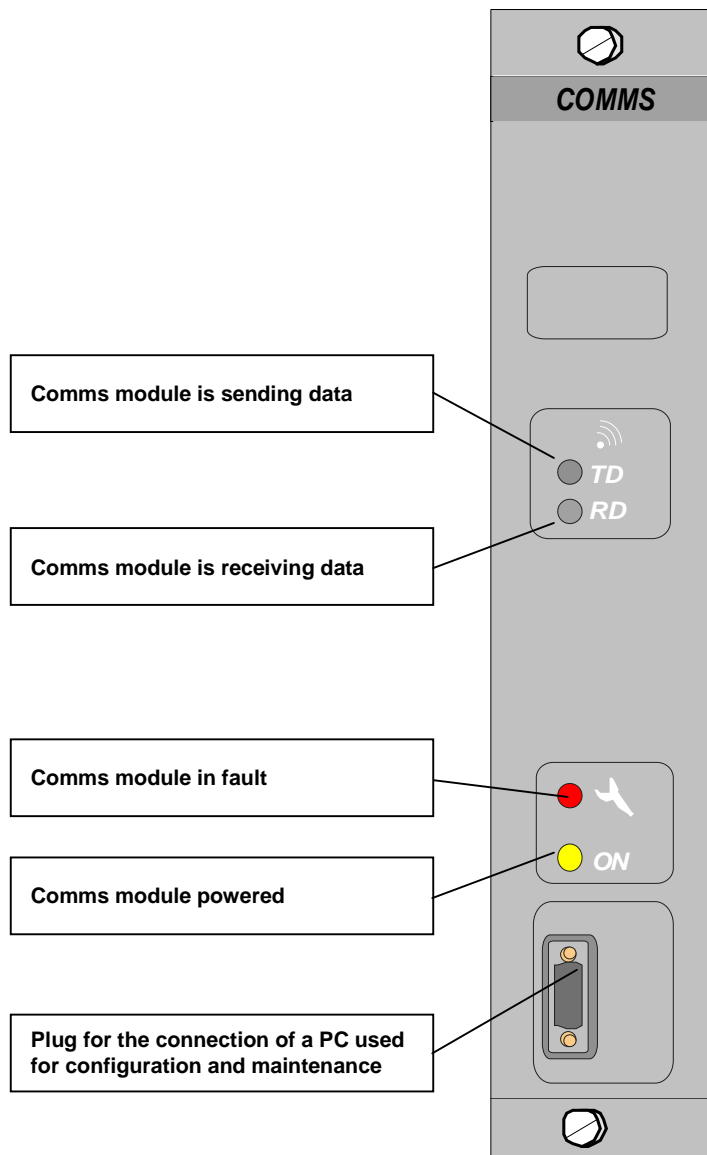
Pause...
```

DNP3 analyser

This analyser shows the different frames recognised with some complementary information such as the direction of the frame (Host -> T200 or T200 -> Host), possibly the error detected (character framing error, overflow, checksum, bad length, bad control character). In case of multiple errors, it's the first one that is indicated.

Each correct frame is shown, one block per line (10 bytes for the first one, 18 bytes for next ones, last one may be shorter).

Front panel indications



Normal operation

During normal operation the COMMS module display is as follow :

RD and TD communication LEDs are lighted when T200 is receiving or transmitting.

- ON LED is lighted.
- Fault LED is OFF.

Diagnostic using front panel indicators and time-stamped events

T200 includes time stamped facilities in order to help in the diagnostic. The events are saved into the CPU module.

The Time stamped events can be read locally from a lap top PC computer equipped with the software "**T200 Configuration and Diagnostic**" and connected to the CPU configuration plug.

- Connect the Lap top to the CPU module.
- The PC being powered, and under Dos control, insert the diskette "**T200 Configuration and Diagnostic**" into the driver and press **A:MG** then **ENTER** (Capital letter either not). The main menu is displayed.

For information on the use of the configuration software package, refer to the chapter entitled "Commissioning" in the T200 user's manual.

Event	Possible cause	Solution
The "ON" LED on the COMMS module is OFF.	Equipment is not powered.	Power the equipment.
	Control unit supply fuse is burnt.	Change the fuse on the Power supply unit. Fuse : 5x20mm, 0.8A semi time lag.
	Comms module failure.	Change the Comms module.
The "Fault" LED on the Comms module is ON.	Configuration has been lost.	Connect a lap top PC computer equipped with the software " T200 Configuration and Diagnostic " If "configuration lost" is blinking in the main menu, verify or enter correct configuration. After validation, if problem persists change the Comms module.
The "Fault" LED on the Comms module blink.	The Comms module software is in fault.	Press "General RESET" button on the Power supply unit. If the led doesn't turn OFF some seconds later, change the Comms module.
The "Fault" LED on the "Control" module is ON and presence of MODBUS comms failure event.	Comms module failure.	Change the Comms module.

Replacing the Comms module

Removing the module

- a) switch off the control unit,
 - Switch Off the AC supply.
 - Disconnect the batteries.
- b) unscrew the two module locking screws and extract it from its location.

Installing the module

- a) install the new board and lock it to its slot,
- b) switch the control unit on again.

IMPORTANT: Do not forget to configure the module; refer to the section entitled " Communication module configuration "

<h1>DNP V3.00</h1> <h2>DEVICE PROFILE DOCUMENT</h2>	
Vendor Name :	SCHNEIDER ELECTRIC
Device Name :	T200 DNP3 V1.02
Highest DNP Level Supported : For Requests : L1 For Responses : L1	Device Function : <input type="checkbox"/> Master <input checked="" type="checkbox"/> Slave
Notable objects, functions, and/or qualifiers supported in addition to the Highest DNP Levels Supported (the complete list is described in the attached table) : <ul style="list-style-type: none"> • Binary input - All Variations : Read all points • Analog input - All Variations : Read all points 	
Maximum Data Link Frame Size (octets) : Transmitted : 292 Received : (must be 292)	Maximum Application Fragment Size (octets) : Transmitted : 1418 ⁽¹⁾ (if > 2048, must be configurable) Received : 2048 (must be ≥ 249)
Maximum Data Link Re-tries : <input type="checkbox"/> None <input type="checkbox"/> Fixed at _____ <input checked="" type="checkbox"/> Configurable, range 1 to 10 ⁽²⁾	Maximum Application Layer Re-tries : <input checked="" type="checkbox"/> None <input type="checkbox"/> Configurable, range _____ to _____ (Fixed is not permitted)

⁽¹⁾ Allows an application fragment to contain all class 0 data (including expansion, future use and reserved points) and 100 event objects (corresponding to event buffer capacity).

⁽²⁾ Configuration with a PC.

<p>Requires Data Link Layer Confirmation :</p> <p> <input type="checkbox"/> Never <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input checked="" type="checkbox"/> Configurable⁽³⁾ </p>																																																																					
<p>Requires Application Layer Confirmation :</p> <p> <input checked="" type="checkbox"/> Never <input type="checkbox"/> Always (not recommended) <input type="checkbox"/> When reporting Event Data (Slave devices only) <input type="checkbox"/> When sending multi-fragment responses (Slave devices only) </p> <p> <input type="checkbox"/> Sometimes If 'Sometimes', when ? _____ </p> <p> <input type="checkbox"/> Configurable If 'Configurable', how ? _____ </p>																																																																					
<p>Timeouts while waiting for :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Data Link Confirm</td> <td style="width: 15%;"><input type="checkbox"/> None</td> <td style="width: 15%;"><input type="checkbox"/> Fixed at _____</td> <td style="width: 15%;"><input type="checkbox"/> Variable</td> <td style="width: 25%;"><input checked="" type="checkbox"/> Configurable⁽⁴⁾</td> </tr> <tr> <td>Complete Appl. Fragment</td> <td><input checked="" type="checkbox"/> None</td> <td><input type="checkbox"/> Fixed at _____</td> <td><input type="checkbox"/> Variable</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Application Confirm</td> <td><input checked="" type="checkbox"/> None</td> <td><input type="checkbox"/> Fixed at _____</td> <td><input type="checkbox"/> Variable</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Complete Appl. Response</td> <td><input checked="" type="checkbox"/> None</td> <td><input type="checkbox"/> Fixed at _____</td> <td><input type="checkbox"/> Variable</td> <td><input type="checkbox"/> Configurable</td> </tr> </table> <p>Others _____</p>					Data Link Confirm	<input type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input checked="" type="checkbox"/> Configurable ⁽⁴⁾	Complete Appl. Fragment	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable	Application Confirm	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable	Complete Appl. Response	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Fixed at _____	<input type="checkbox"/> Variable	<input type="checkbox"/> Configurable																																													
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<p>Sends/Executes Control Operations :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">WRITE Binary Outputs</td> <td style="width: 15%;"><input checked="" type="checkbox"/> Never</td> <td style="width: 15%;"><input type="checkbox"/> Always</td> <td style="width: 15%;"><input type="checkbox"/> Sometimes</td> <td style="width: 25%;"><input type="checkbox"/> Configurable</td> </tr> <tr> <td>SELECT/OPERATE</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁵⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>DIRECT OPERATE</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁵⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>DIRECT OPERATE – NO ACK</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁵⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr><td colspan="5"> </td></tr> <tr> <td>Count > 1</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁶⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Pulse On</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁶⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Pulse Off</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁶⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Latch On</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁶⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Latch Off</td> <td><input type="checkbox"/> Never</td> <td><input checked="" type="checkbox"/> Always⁽⁶⁾</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr><td colspan="5"> </td></tr> <tr> <td>Queue</td> <td><input checked="" type="checkbox"/> Never</td> <td><input type="checkbox"/> Always</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> <tr> <td>Clear Queue</td> <td><input checked="" type="checkbox"/> Never</td> <td><input type="checkbox"/> Always</td> <td><input type="checkbox"/> Sometimes</td> <td><input type="checkbox"/> Configurable</td> </tr> </table>					WRITE Binary Outputs	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	SELECT/OPERATE	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁵⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	DIRECT OPERATE	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁵⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	DIRECT OPERATE – NO ACK	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁵⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable						Count > 1	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	Pulse On	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	Pulse Off	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	Latch On	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	Latch Off	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable						Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable	Clear Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable
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DIRECT OPERATE – NO ACK	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁵⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Count > 1	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Pulse On	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Pulse Off	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Latch On	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Latch Off	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Always ⁽⁶⁾	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	
Clear Queue	<input checked="" type="checkbox"/> Never	<input type="checkbox"/> Always	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Configurable																																																																	

⁽³⁾ Configuration with a PC.

⁽⁴⁾ Range 1 to 10 s, configuration with a PC.

⁽⁵⁾ Executes as it has been received.

⁽⁶⁾ Always execute a "Pulse On" with "on-time" = 3 s.

<p>Reports Binary Input Change Events when no specific variation requested :</p> <ul style="list-style-type: none"> <input type="checkbox"/> Never <input checked="" type="checkbox"/> Only time-tagged <input type="checkbox"/> Only non-time-tagged <input type="checkbox"/> Configurable to send both, one or the other (attach explanation) 	<p>Reports time-tagged Binary Input Change Events when no specific variation requested :</p> <ul style="list-style-type: none"> <input type="checkbox"/> Never <input checked="" type="checkbox"/> Binary Input Change With Time <input type="checkbox"/> Binary Input Change With Relative Time <input type="checkbox"/> Configurable (attach explanation)
<p>Sends Unsolicited Responses :</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Never <input type="checkbox"/> Configurable (attach explanation) <input type="checkbox"/> Only certain objects <input type="checkbox"/> Sometimes (attach explanation) <input type="checkbox"/> ENABLE/DISABLE UNSOLICITED Function codes supported 	<p>Sends Static Data in Unsolicited Responses :</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Never <input type="checkbox"/> When Device Restarts <input type="checkbox"/> When Status Flags Change <p>No other options permitted.</p>
<p>Default Counter Object/Variation :</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> No Counters Reported <input type="checkbox"/> Configurable (attach explanation) <input type="checkbox"/> Default Object _____ Default Variation _____ <input type="checkbox"/> Point-by-point list attached 	<p>Counters Roll Over at :</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> No Counters Reported <input type="checkbox"/> Configurable (attach explanation) <input type="checkbox"/> 16 Bits <input type="checkbox"/> 32 Bits <input type="checkbox"/> Other Value _____ <input type="checkbox"/> Point-by-point list attached
<p>Sends Multi-Fragment Responses : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	

OBJECT			REQUEST (slave must parse)		RESPONSE (master must parse)		Notes
Obj	Var	Description	Func Codes (dec)	Qual Codes (hex)	Func Codes (dec)	Qual Codes (hex)	
1	0	Binary Input – All Variations	1	06			
1	1	Binary Input			129	00	
1	2	Binary Input with Status			129	00	
2	2	Binary Input Change with Time			129	17	
10	0	Binary Output – All Variations	1	06			(7)
12	1	Control Relay Output Block	3,4,5,6	17,28	129	echo of request	
30	0	Analog Input – All Variations	1	06			
30	2	16-Bit Analog Input			129	00	
32	2	16-Bit Analog Change Event without Time			129	17	
40	0	Analog Output Status – All Variations	1	06			(7)
41	2	16-Bit Analog Output Block	3,4,5,6	17,28			(7)
50	1	Time and Date	2 (see 4.14)	07 where quantity=1			
52	2	Time Delay Fine			129	07 quantity=1	
60	1	Class 0 Data	1	06			
60	2	Class 1 Data	1	06,07,08			
60	3	Class 2 Data	1	06,07,08			(7)
60	4	Class 3 Data	1	06,07,08			(7)
80	1	Internal Indications	2	00 index=7			
		No object	13				
		No object	23 (see 4.14)				

 Addition to Highest DNP Levels Supported

(7) Response to this request is OBJECT UNKNOWN

	Base
	Expansion

T200 P

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Control Relay Output Block	04 / 04	12	1						SW1
Control Relay Output Block	05 / 05	12	1						Reserved
Control Relay Output Block	06 / 06	12	1						Reserved
Control Relay Output Block	07 / 07	12	1						Enable/Disable Automatism
Control Relay Output Block	15 / 21	12	1						FPI Reset ⁸
Control Relay Output Block	18 / 24	12	1						Reserved

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	20 / 32	1	1, 2	No Status	2	2	1	With Time	SW1
Binary Input	21 / 33	1	1, 2	No Status	2	2	1	With Time	Reserved
Binary Input	22 / 34	1	1, 2	No Status	2	2	1	With Time	Reserved
Binary Input	23 / 35	1	1, 2	No Status	2	2	1	With Time	Enable/Disable Automatism
Binary Input	31 / 49	1	1, 2	No Status	2	2	1	With Time	FPI Reset ⁹
Binary Input	34 / 52	1	1, 2	No Status	2	2	1	With Time	Reserved

⁸ Only accepts "On" orders.⁹ Always read as "Off".

	Base
	Expansion

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	3C / 60	1	1	No Status	2	2	1	With Time	Phase fault SW
Binary Input	3D / 61	1	1	No Status	2	2	1	With Time	Earth fault A SW
Binary Input	3E / 62	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	3F / 63	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	40 / 64	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	41 / 65	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	42 / 66	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	43 / 67	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	44 / 68	1	1	No Status	2	2	1	With Time	Status SW
Binary Input	45 / 69	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	46 / 70	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	47 / 71	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	48 / 72	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	49 / 73	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	4A / 74	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	4B / 75	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	4C / 76	1	1	No Status	2	2	1	With Time	Digital input 1
Binary Input	4D / 77	1	1	No Status	2	2	1	With Time	Digital input 2
Binary Input	4E / 78	1	1	No Status	2	2	1	With Time	Digital input 3
Binary Input	4F / 79	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	50 / 80	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	51 / 81	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	52 / 82	1	1	No Status	2	2	1	With Time	Local
Binary Input	53 / 83	1	1	No Status	2	2	1	With Time	Immediate AC supply OFF
Binary Input	54 / 84	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	55 / 85	1	1	No Status	2	2	1	With Time	Charger / FPI fault
Binary Input	56 / 86	1	1	No Status	2	2	1	With Time	Battery fault
Binary Input	57 / 87	1	1	No Status	2	2	1	With Time	Switchgear supply OFF
Binary Input	58 / 88	1	1	No Status	2	2	1	With Time	Delayed AC supply OFF
Binary Input	59 / 89	1	1	No Status	2	2	1	With Time	Operated
Binary Input	5A / 90	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	5B / 91	1	1	No Status	2	2	1	With Time	Reserved

	Base
	Expansion

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Analog Input	C0 / 192	30	2	16-Bit	32	2	1	16-Bit Without Time	Phase Current
Analog Input	C1 / 193	30	2	16-Bit	32	2	1	16-Bit Without Time	Voltage Measure
Analog Input	C2 / 194	30	2	16-Bit	32	2	1	16-Bit Without Time	Reserved
Analog Input	C3 / 195	30	2	16-Bit	32	2	1	16-Bit Without Time	Reserved

	Base
	Expansion
	PowerMeter option

T200 I

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Control Relay Output Block	04 / 04	12	1						SW1
Control Relay Output Block	05 / 05	12	1						SW2
Control Relay Output Block	06 / 06	12	1						SW3
Control Relay Output Block	07 / 07	12	1						SW4
Control Relay Output Block	08 / 08	12	1						SW5
Control Relay Output Block	09 / 09	12	1						SW6
Control Relay Output Block	0A / 10	12	1						SW7
Control Relay Output Block	0B / 11	12	1						SW8
Control Relay Output Block	0C / 12	12	1						SW9
Control Relay Output Block	0D / 13	12	1						SW10
Control Relay Output Block	0E / 14	12	1						SW11
Control Relay Output Block	0F / 15	12	1						SW12
Control Relay Output Block	10 / 16	12	1						SW13
Control Relay Output Block	11 / 17	12	1						SW14
Control Relay Output Block	12 / 18	12	1						SW15
Control Relay Output Block	13 / 19	12	1						SW16

Control Relay Output Block	15 / 21	12	1						FPI Reset ¹⁰
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Control Relay Output Block	18 / 24	12	1						Enable/Disable Automatism Group 1
Control Relay Output Block	19 / 25	12	1						Enable/Disable Automatism Group 2
Control Relay Output Block	1A / 26	12	1						Enable/Disable Automatism Group 3
Control Relay Output Block	1B / 27	12	1						Enable/Disable Automatism Group 4

¹⁰ Only accepts "On" orders.

DNP3 Communication

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	20 / 32	1	1, 2	No Status	2	2	1	With Time	SW1
Binary Input	21 / 33	1	1, 2	No Status	2	2	1	With Time	SW2
Binary Input	22 / 34	1	1, 2	No Status	2	2	1	With Time	SW3
Binary Input	23 / 35	1	1, 2	No Status	2	2	1	With Time	SW4
Binary Input	24 / 36	1	1, 2	No Status	2	2	1	With Time	SW5
Binary Input	25 / 37	1	1, 2	No Status	2	2	1	With Time	SW6
Binary Input	26 / 38	1	1, 2	No Status	2	2	1	With Time	SW7
Binary Input	27 / 39	1	1, 2	No Status	2	2	1	With Time	SW8
Binary Input	28 / 40	1	1, 2	No Status	2	2	1	With Time	SW9
Binary Input	29 / 41	1	1, 2	No Status	2	2	1	With Time	SW10
Binary Input	2A / 42	1	1, 2	No Status	2	2	1	With Time	SW11
Binary Input	2B / 43	1	1, 2	No Status	2	2	1	With Time	SW12
Binary Input	2C / 44	1	1, 2	No Status	2	2	1	With Time	SW13
Binary Input	2D / 45	1	1, 2	No Status	2	2	1	With Time	SW14
Binary Input	2E / 46	1	1, 2	No Status	2	2	1	With Time	SW15
Binary Input	2F / 47	1	1, 2	No Status	2	2	1	With Time	SW16

Binary Input	31 / 49	1	1, 2	No Status	2	2	1	With Time	FPI Reset ¹¹
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Binary Input	34 / 52	1	1, 2	No Status	2	2	1	With Time	Enable/Disable Automatism Group 1
Binary Input	35 / 53	1	1, 2	No Status	2	2	1	With Time	Enable/Disable Automatism Group 2
Binary Input	36 / 54	1	1, 2	No Status	2	2	1	With Time	Enable/Disable Automatism Group 3
Binary Input	37 / 55	1	1, 2	No Status	2	2	1	With Time	Enable/Disable Automatism Group 4

¹¹ Always read as "Off"

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	3C / 60	1	1	No Status	2	2	1	With Time	Phase fault SW1
Binary Input	3D / 61	1	1	No Status	2	2	1	With Time	Earth fault A SW1
Binary Input	3E / 62	1	1	No Status	2	2	1	With Time	Phase fault SW2
Binary Input	3F / 63	1	1	No Status	2	2	1	With Time	Earth fault A SW2
Binary Input	40 / 64	1	1	No Status	2	2	1	With Time	Phase fault SW3
Binary Input	41 / 65	1	1	No Status	2	2	1	With Time	Earth fault A SW3
Binary Input	42 / 66	1	1	No Status	2	2	1	With Time	Phase fault SW4
Binary Input	43 / 67	1	1	No Status	2	2	1	With Time	Earth fault A SW4
Binary Input	44 / 68	1	1	No Status	2	2	1	With Time	Status SW1
Binary Input	45 / 69	1	1	No Status	2	2	1	With Time	Status SW2
Binary Input	46 / 70	1	1	No Status	2	2	1	With Time	Status SW3
Binary Input	47 / 71	1	1	No Status	2	2	1	With Time	Status SW4
Binary Input	48 / 72	1	1	No Status	2	2	1	With Time	Earth fault B SW1
Binary Input	49 / 73	1	1	No Status	2	2	1	With Time	Earth fault B SW2
Binary Input	4A / 74	1	1	No Status	2	2	1	With Time	Earth fault B SW3
Binary Input	4B / 75	1	1	No Status	2	2	1	With Time	Earth fault B SW4
Binary Input	4C / 76	1	1	No Status	2	2	1	With Time	Digital Input 1
Binary Input	4D / 77	1	1	No Status	2	2	1	With Time	Digital Input 2
Binary Input	4E / 78	1	1	No Status	2	2	1	With Time	MV presence SW1
Binary Input	4F / 79	1	1	No Status	2	2	1	With Time	MV presence SW2
Binary Input	50 / 80	1	1	No Status	2	2	1	With Time	MV presence SW3
Binary Input	51 / 81	1	1	No Status	2	2	1	With Time	MV presence SW4
Binary Input	52 / 82	1	1	No Status	2	2	1	With Time	Local
Binary Input	53 / 83	1	1	No Status	2	2	1	With Time	Immediate AC supply OFF
Binary Input	54 / 84	1	1	No Status	2	2	1	With Time	Digital Input 3
Binary Input	55 / 85	1	1	No Status	2	2	1	With Time	Charger / FPI fault
Binary Input	56 / 86	1	1	No Status	2	2	1	With Time	Battery fault
Binary Input	57 / 87	1	1	No Status	2	2	1	With Time	Switchgear supply OFF
Binary Input	58 / 88	1	1	No Status	2	2	1	With Time	Delayed AC supply OFF
Binary Input	59 / 89	1	1	No Status	2	2	1	With Time	Digital Input 4
Binary Input	5A / 90	1	1	No Status	2	2	1	With Time	Digital Input 5
Binary Input	5B / 91	1	1	No Status	2	2	1	With Time	Digital Input 6

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	5C / 92	1	1	No Status	2	2	1	With Time	Phase fault SW5
Binary Input	5D / 93	1	1	No Status	2	2	1	With Time	Earth fault A SW5
Binary Input	5E / 94	1	1	No Status	2	2	1	With Time	Phase fault SW6
Binary Input	5F / 95	1	1	No Status	2	2	1	With Time	Earth fault A SW6
Binary Input	60 / 96	1	1	No Status	2	2	1	With Time	Phase fault SW7
Binary Input	61 / 97	1	1	No Status	2	2	1	With Time	Earth fault A SW7
Binary Input	62 / 98	1	1	No Status	2	2	1	With Time	Phase fault SW8
Binary Input	63 / 99	1	1	No Status	2	2	1	With Time	Earth fault A SW8
Binary Input	64 / 100	1	1	No Status	2	2	1	With Time	Status SW5
Binary Input	65 / 101	1	1	No Status	2	2	1	With Time	Status SW6
Binary Input	66 / 102	1	1	No Status	2	2	1	With Time	Status SW7
Binary Input	67 / 103	1	1	No Status	2	2	1	With Time	Status SW8
Binary Input	68 / 104	1	1	No Status	2	2	1	With Time	Earth fault B SW5
Binary Input	69 / 105	1	1	No Status	2	2	1	With Time	Earth fault B SW6
Binary Input	6A / 106	1	1	No Status	2	2	1	With Time	Earth fault B SW7
Binary Input	6B / 107	1	1	No Status	2	2	1	With Time	Earth fault B SW8
Binary Input	6C / 108	1	1	No Status	2	2	1	With Time	Digital Input 7
Binary Input	6D / 109	1	1	No Status	2	2	1	With Time	Digital Input 8
Binary Input	6E / 110	1	1	No Status	2	2	1	With Time	MV presence SW5
Binary Input	6F / 111	1	1	No Status	2	2	1	With Time	MV presence SW6
Binary Input	70 / 112	1	1	No Status	2	2	1	With Time	MV presence SW7
Binary Input	71 / 113	1	1	No Status	2	2	1	With Time	MV presence SW8
Binary Input	72 / 114	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	73 / 115	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	74 / 116	1	1	No Status	2	2	1	With Time	Digital Input 9
Binary Input	75 / 117	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	76 / 118	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	77 / 119	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	78 / 120	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	79 / 121	1	1	No Status	2	2	1	With Time	Digital Input 10
Binary Input	7A / 122	1	1	No Status	2	2	1	With Time	Digital Input 11
Binary Input	7B / 123	1	1	No Status	2	2	1	With Time	Digital Input 12

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	7C / 124	1	1	No Status	2	2	1	With Time	Phase fault SW9
Binary Input	7D / 125	1	1	No Status	2	2	1	With Time	Earth fault A SW9
Binary Input	7E / 126	1	1	No Status	2	2	1	With Time	Phase fault SW10
Binary Input	7F / 127	1	1	No Status	2	2	1	With Time	Earth fault A SW10
Binary Input	80 / 128	1	1	No Status	2	2	1	With Time	Phase fault SW11
Binary Input	81 / 129	1	1	No Status	2	2	1	With Time	Earth fault A SW11
Binary Input	82 / 130	1	1	No Status	2	2	1	With Time	Phase fault SW12
Binary Input	83 / 131	1	1	No Status	2	2	1	With Time	Earth fault A SW12
Binary Input	84 / 132	1	1	No Status	2	2	1	With Time	Status SW9
Binary Input	85 / 133	1	1	No Status	2	2	1	With Time	Status SW10
Binary Input	86 / 134	1	1	No Status	2	2	1	With Time	Status SW11
Binary Input	87 / 135	1	1	No Status	2	2	1	With Time	Status SW12
Binary Input	88 / 136	1	1	No Status	2	2	1	With Time	Earth fault B SW9
Binary Input	89 / 137	1	1	No Status	2	2	1	With Time	Earth fault B SW10
Binary Input	8A / 138	1	1	No Status	2	2	1	With Time	Earth fault B SW11
Binary Input	8B / 139	1	1	No Status	2	2	1	With Time	Earth fault B SW12
Binary Input	8C / 140	1	1	No Status	2	2	1	With Time	Digital Input 13
Binary Input	8D / 141	1	1	No Status	2	2	1	With Time	Digital Input 14
Binary Input	8E / 142	1	1	No Status	2	2	1	With Time	MV presence SW9
Binary Input	8F / 143	1	1	No Status	2	2	1	With Time	MV presence SW10
Binary Input	90 / 144	1	1	No Status	2	2	1	With Time	MV presence SW11
Binary Input	91 / 145	1	1	No Status	2	2	1	With Time	MV presence SW12
Binary Input	92 / 146	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	93 / 147	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	94 / 148	1	1	No Status	2	2	1	With Time	Digital Input 15
Binary Input	95 / 149	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	96 / 150	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	97 / 151	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	98 / 152	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	99 / 153	1	1	No Status	2	2	1	With Time	Digital Input 16
Binary Input	9A / 154	1	1	No Status	2	2	1	With Time	Digital Input 17
Binary Input	9B / 155	1	1	No Status	2	2	1	With Time	Digital Input 18

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Binary Input	9C / 156	1	1	No Status	2	2	1	With Time	Phase fault SW13
Binary Input	9D / 157	1	1	No Status	2	2	1	With Time	Earth fault A SW14
Binary Input	9E / 158	1	1	No Status	2	2	1	With Time	Phase fault SW15
Binary Input	9F / 159	1	1	No Status	2	2	1	With Time	Earth fault A SW16
Binary Input	A0 / 160	1	1	No Status	2	2	1	With Time	Phase fault SW13
Binary Input	A1 / 161	1	1	No Status	2	2	1	With Time	Earth fault A SW14
Binary Input	A2 / 162	1	1	No Status	2	2	1	With Time	Phase fault SW15
Binary Input	A3 / 163	1	1	No Status	2	2	1	With Time	Earth fault A SW16
Binary Input	A4 / 164	1	1	No Status	2	2	1	With Time	Status SW13
Binary Input	A5 / 165	1	1	No Status	2	2	1	With Time	Status SW14
Binary Input	A6 / 166	1	1	No Status	2	2	1	With Time	Status SW15
Binary Input	A7 / 167	1	1	No Status	2	2	1	With Time	Status SW16
Binary Input	A8 / 168	1	1	No Status	2	2	1	With Time	Earth fault B SW13
Binary Input	A9 / 169	1	1	No Status	2	2	1	With Time	Earth fault B SW14
Binary Input	AA / 170	1	1	No Status	2	2	1	With Time	Earth fault B SW15
Binary Input	AB / 171	1	1	No Status	2	2	1	With Time	Earth fault B SW16
Binary Input	AC / 172	1	1	No Status	2	2	1	With Time	Digital Input 19
Binary Input	AD / 173	1	1	No Status	2	2	1	With Time	Digital Input 20
Binary Input	AE / 174	1	1	No Status	2	2	1	With Time	MV presence SW13
Binary Input	AF / 175	1	1	No Status	2	2	1	With Time	MV presence SW14
Binary Input	B0 / 176	1	1	No Status	2	2	1	With Time	MV presence SW15
Binary Input	B1 / 177	1	1	No Status	2	2	1	With Time	MV presence SW16
Binary Input	B2 / 178	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B3 / 179	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B4 / 180	1	1	No Status	2	2	1	With Time	Digital Input 21
Binary Input	B5 / 181	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B6 / 182	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B7 / 183	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B8 / 184	1	1	No Status	2	2	1	With Time	Reserved
Binary Input	B9 / 185	1	1	No Status	2	2	1	With Time	Digital Input 22
Binary Input	BA / 186	1	1	No Status	2	2	1	With Time	Digital Input 23
Binary Input	BB / 187	1	1	No Status	2	2	1	With Time	Digital Input 24

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Analog Input	C0 / 192	30	2	16-Bit	32	2	1	16-Bit Without Time	SW1 Current
Analog Input	C1 / 193	30	2	16-Bit	32	2	1	16-Bit Without Time	SW2 Current
Analog Input	C2 / 194	30	2	16-Bit	32	2	1	16-Bit Without Time	SW3 Current
Analog Input	C3 / 195	30	2	16-Bit	32	2	1	16-Bit Without Time	SW4 Current
Analog Input	C4 / 196	30	2	16-Bit	32	2	1	16-Bit Without Time	SW5 Current
Analog Input	C5 / 197	30	2	16-Bit	32	2	1	16-Bit Without Time	SW6 Current
Analog Input	C6 / 198	30	2	16-Bit	32	2	1	16-Bit Without Time	SW7 Current
Analog Input	C7 / 199	30	2	16-Bit	32	2	1	16-Bit Without Time	SW8 Current
Analog Input	C8 / 200	30	2	16-Bit	32	2	1	16-Bit Without Time	SW9 Current
Analog Input	C9 / 201	30	2	16-Bit	32	2	1	16-Bit Without Time	SW10 Current
Analog Input	CA / 202	30	2	16-Bit	32	2	1	16-Bit Without Time	SW11 Current
Analog Input	CB / 203	30	2	16-Bit	32	2	1	16-Bit Without Time	SW12 Current
Analog Input	CC / 204	30	2	16-Bit	32	2	1	16-Bit Without Time	SW13 Current
Analog Input	CD / 205	30	2	16-Bit	32	2	1	16-Bit Without Time	SW14 Current
Analog Input	CE / 206	30	2	16-Bit	32	2	1	16-Bit Without Time	SW15 Current
Analog Input	CF / 207	30	2	16-Bit	32	2	1	16-Bit Without Time	SW16 Current

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Analog Input	D0 / 208	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Current 1
Analog Input	D1 / 209	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Current 2
Analog Input	D2 / 210	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Current 3
Analog Input	D3 / 211	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Voltage 1
Analog Input	D4 / 212	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Voltage 2
Analog Input	D5 / 213	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 1 Voltage 3
Analog Input	D6 / 214	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Current 1
Analog Input	D7 / 215	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Current 2
Analog Input	D8 / 216	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Current 3
Analog Input	D9 / 217	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Voltage 1
Analog Input	DA / 218	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Voltage 2
Analog Input	DB / 219	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 2 Voltage 3

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Analog Input	DC / 220	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Current 1
Analog Input	DD / 221	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Current 2
Analog Input	DE / 222	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Current 3
Analog Input	DF / 223	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Voltage 1
Analog Input	E0 / 224	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Voltage 2
Analog Input	E1 / 225	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 3 Voltage 3
Analog Input	E2 / 226	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Current 1
Analog Input	E3 / 227	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Current 2
Analog Input	E4 / 228	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Current 3
Analog Input	E5 / 229	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Voltage 1
Analog Input	E6 / 230	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Voltage 2
Analog Input	E7 / 231	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 4 Voltage 3

	Base
	Expansion
	PowerMeter option

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Analog Input	E8 / 232	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Current 1
Analog Input	E9 / 233	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Current 2
Analog Input	EA / 234	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Current 3
Analog Input	EB / 235	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Voltage 1
Analog Input	EC / 236	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Voltage 2
Analog Input	ED / 237	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 5 Voltage 3
Analog Input	EE / 238	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Current 1
Analog Input	EF / 239	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Current 2
Analog Input	F0 / 240	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Current 3
Analog Input	F1 / 241	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Voltage 1
Analog Input	F2 / 242	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Voltage 2
Analog Input	F3 / 243	30	2	16-Bit	32	2	1	16-Bit Without Time	PM 6 Voltage 3

	Base
	Expansion
	PowerMeter option (further development)

Description	Index (hex/dec)	Default Static Variation			Default Event Variation				Point Name
		Obj	Var	Desc	Obj	Var	Class	Desc	
Not defined (further development)	F4 / 244								PM 1 Active energy
Not defined (further development)	F5 / 245								PM 1 Reactive energy
Not defined (further development)	F6 / 246								PM 2 Active energy
Not defined (further development)	F7 / 247								PM 2 Reactive energy
Not defined (further development)	F8 / 248								PM 3 Active energy
Not defined (further development)	F9 / 249								PM 3 Reactive energy
Not defined (further development)	FA / 250								PM 4 Active energy
Not defined (further development)	FB / 251								PM 4 Reactive energy
Not defined (further development)	FC / 252								PM 5 Active energy
Not defined (further development)	FD / 253								PM 5 Reactive energy
Not defined (further development)	FE / 254								PM 6 Active energy
Not defined (further development)	FF / 255								PM 6 Reactive energy

Internal INdications

- **Time-synchronization required from the master**
Bit 4 of first IIN byte is set when T200 starts up.
More, T200 needs to be synchronized by the master every hour. This is necessary to assume a good accuracy of time-stamps. So, if T200 doesn't receive any synchronisation from the master in an hour delay (since the last synchronisation message received), the IIN bit is set.

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